

SMOKE ALARM

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The smoke alarm circuit presented here is based on the readily available photon-coupled interrupter

module and timer IC NE555. The photo interrupter module is used as the smoke detector, while timer 555 is wired in astable configuration as an AF oscillator for sounding alarm via a loudspeaker.

In the absence of any smoke, the gap of photo interrupter module is clear and the light from LED falls on the phototransistor through the slot. As a result, the collector of phototransistor is pulled towards ground. This causes reset pin 4 (reset) of IC 555 to go low. Accordingly, the timer is reset and hence the alarm does not sound.

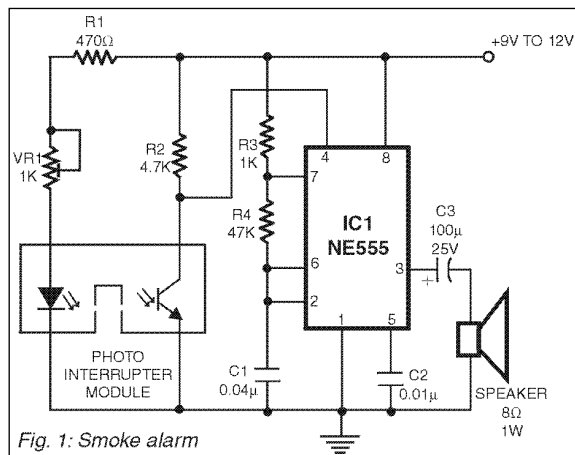


Fig. 1: Smoke alarm

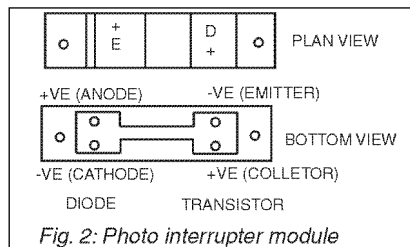


Fig. 2: Photo interrupter module

However, when smoke is present in the gap of the photo interrupter module, the light beam from LED to the phototransistor is obstructed. As a result, the phototransistor stops conducting and pin 4 (reset) of IC 555 goes high to activate the alarm.

Note. The unit must be housed inside an enclosure with holes to allow entry of smoke.